

Caribbean Time Series – CaTS

67° W 17° 36' N

Standard Operating Procedure

CaTS is occupied on a monthly basis aboard R/V CHAPMAN. Ship leaves the dock at 06:00. Arrival at CaTS is around 09:30. 2 to 4 CTD/rosette casts are performed. The initial cast at around 10:00 to 11:00 is used for reporting physical water column structure and chemical profiles. Additional casts are performed for primary productivity, pigments for HPLC, ETS activity and other microbiological assays.

1 ROSETTE SAMPLING

1.1 The CTD- rosette unit is configured as follows:

- 1.1.1 SBE32 rosette 24 Ocean Test Equipment 10 L teflon coated bottles with Teflon coated internal springs and silicon rubber seals
- 1.1.2 SBE25 CTD
- 1.1.3 Seapoint Chl a fluorometer
- 1.1.4 Seapoint turbidity meter
- 1.1.5 SBE 43 polarographic oxygen electrode

1.2 pre-deployment check:

- 1.2.1 Check instrument before leaving dock. Assure communication between deck unit and carousel by running the SEASAVE software. Check hoses: conductivity cell to pump to sbe43 oxygen electrode.
- 1.2.2 Check sheave on J-frame and preventor pins on sheave to avoid cable derailing.
- 1.2.3 Wipe Chl a fluorometer windows with clean tissue.
- 1.2.4 Cock all bottles.
- 1.2.5 Remove conductivity bridge wetting hose.

1.3 Deployment

- 1.3.1 Turn on using magnetic switch immediately prior to deployment upon software prompt.
- 1.3.2 Deploy gear at surface. Watch for digital readouts of depth and salinity. On terminal display, watch for green line at surface indicating fluorometer **on**. 'Yo-yo' equipment at surface for 5min for sensor stabilization.
- 1.3.3 Pay out wire at 10 m/min or less to maximum depth of 1000 m.
- 1.3.4 Trip bottles on upcast at 1000, 750, 500, 400, 300, 200, 150, 125, 100, 75, 50, 25, 10 and 0 m.
- 1.3.5 UPON RECOVERY, TURN OFF INSTRUMENT USING MAGNETIC SWITCH

1.4 Sample retrieval. Collect samples in the following order:

- 1.4.1 O₂ – Use BOD bottles and silicon tubing. Connect tube to Ocean test bottle and immerse end to bottom of bottle. Flush with at least 2 volumes, slowly remove tube with flow; leave large meniscus on lip of bottle;

immediately add reagents and cap bottle. Add water to outer lip of closed bottle and seal tightly with parafilm.

- 1.4.2 Water chemistry – Use 500 ml teflon-coated HDPE bottles. Note that bottles should be half full with previous month samples. Rinse 3 times with small volume (~20 ml) directly from Ocean Test bottle. Fill bottle to brim and cap. AVOID TOUCHING O-RING ON OCEAN TEST BOTTLE SPIGOT WITH SAMPLING BOTTLE LIP.
- 1.4.3 Metabolism cast – Individual researchers to chose depths and number of bottles. Sample immediately upon retrieval of instrument package. If ~>15 min has passed, remove each bottle from carousel and invert in order to mix before sampling. AVOID TOUCHING O-RING ON OCEAN TEST BOTTLE SPIGOT WITH SAMPLING BOTTLE LIP.

1.5 CTD data processing

- 1.5.1 Download 8 Hz file from instrument upon recovery at 9600 baud.
- 1.5.2 Run SBE Data Process modules as follows:
 - 1.5.2.1 Datchv – depth, scan count, time, conductivity, oxygen, pressure, fluorescence, turbidity
 - 1.5.2.2 deviations, samples per block: 50
 - 1.5.2.3 Filter – time constant A: 0.03, time constant B: 0.15
 - 1.5.2.4 Loopedit – Fixed minimum velocity 0.001 m/s
 - 1.5.2.5 Binaverage – Bin size 1 m
 - 1.5.2.6 Derive – practical salinity, density, potential temperature
- 1.5.3 Calibrate oxygen using potentiometric Winkler titration at standard cast depths
- 1.5.4 Calibrate Chl a using 90% acetone extraction and fluorometric analysis (Welschmeyer) at standard depths